EGU2020-16044, updated on 19 Sep 2020
https://doi.org/10.5194/egusphere-egu2020-16044
EGU General Assembly 2020

The impact of orbital forcing on the Arctic climate during the Last Interglacial simulated by the IPSL-CM6A-LR model

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The Last Interglacial (129 – 116 ka BP) is a time period with a strong orbital forcing which leads to a different seasonal and latitudinal distribution of insolation compared to the present. In particular, these changes amplify the Arctic climate seasonality. They induce warmer summers and colder winters in the high latitudes of the Northern Hemisphere. Such surface conditions favour a huge retreat of the arctic sea ice cover.
In this study, we try to understand how this solar radiation anomaly spreads through the surface and impacts the seasonal arctic sea ice. Using IPSL-CM6A-LR model outputs, we decompose the surface energy budget to identify the role of atmospheric and oceanic key processes beyond 60°N and its changes compared to pre-industrial. We show that solar radiation anomaly is greatly reduced when it reaches the Earth's surface, which emphasizes the role of clouds and water vapor transport.
The results are also compared to other PMIP4-CMIP6 model simulations. We would like to thank PMIP participants for producing and making available their model outputs.

How to cite: Sicard, M., Kageyama, M., Braconnot, P., and Charbit, S.: The impact of orbital forcing on the Arctic climate during the Last Interglacial simulated by the IPSL-CM6A-LR model, EGU General Assembly 2020, Online, 4–8 May 2020, EGU2020-16044, https://doi.org/10.5194/egusphere-egu2020-16044, 2020